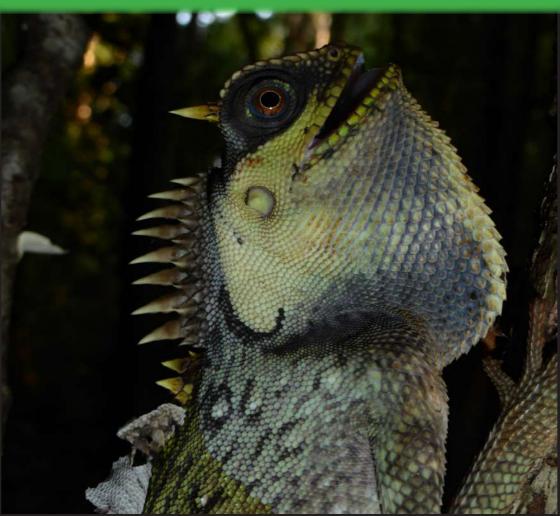


Field Guide JAHOO GIBBON CAMP

ANDOUNG KRALOENG, KEO SEIMA WILDLIFE SANCTUARY, MONDULKIRI, CAMBODIA



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June 2019



Front cover horned tree lizard Acanthosaura capra Insets (l to r) giant hornbill Buceros bicornis

blue pansy butterfly *Junonia orithya* black-shanked douc *Pygathrix nigripes*

Above yellow-cheeked crested gibbon Nomascus gabriellae

Back cover common tree frog *Polypedates leucomystax*

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Ecotourism in

This community-based ecotourism project is run by the indigenous Bunong community of Andoung Kraloeng, and is located in the northern highlands of Keo Seima Wildlife Sanctuary (KSWS). The project, which is run in partnership with local tour operators, gives local villagers an incentive to conserve endangered primates and their habitat by providing a sustainable income.

Thanks for visiting Jahoo Gibbon Camp and the Andoung Kraloeng community; we hope you enjoyed (or are enjoying!) your stay. By visiting Andoung Kraloeng's ecotourism project, you have helped the community to:

• Diversify livelihood options within the village, and switch to more sustainable income generation activities that do not negatively impact natural resources;



• Engage with both the international and domestic tourism market, to attract visitors and raise the profile of this important forest

Andoung Kraloeng

• Increase local capacity to engage with tourists, manage accommodation facilities, provide guided walks and tours, and manage community-based funds;

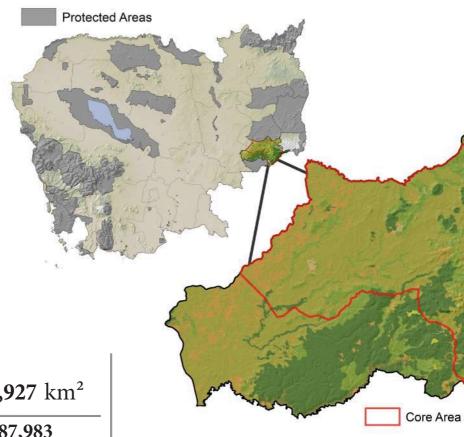


• Protect the forest and wildlife, which the community have a strong cultural and spiritual bond with, and depend significantly on for traditional medicine and other forest products, for future generations.



Sustainable tourism is an important approach to biodiversity conservation. It provides alternative livelihoods for local communities that can directly link the financial benefits of tourism to the conservation of wildlife, species and habitats.





2,927 km²

187,983 **HECTARES CORE PROTECTION ZONE**

ROUGHLY THE SAME SIZE AS **YOSEMITE NATIONAL PARK** U.S.A.

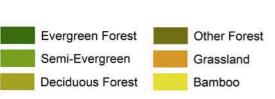
PREVALENT TROPICAL **MONSOONAL** CLIMATE

VERY HIGH BIODIVERSITY VALUES FOR SOUTH-EAST ASIA

SOUTH-WESTERN EXTREMITY OF THE ANNAMITE **MOUNTAIN RANGE**

KEO SEIMA WILDLIFE SANCTUARY





KSWS in numbers

- ► Holds the world's largest populations of **two** species of primate: yellow-cheeked crested gibbon and black-shanked douc.
- ► Six main habitat types: evergreen, semi-evergreen, deciduous dipterocarp, mixed deciduous, bamboo, and grassland.
- ► At least 358 bird species, 104 mammal species, and 86 reptile and amphibian species are found here.
- ► With 21 species, it harbours the greatest diversity of woodpeckers in the world.
- ► Sixty globally threatened vertebrate species (10 Critically Endangered and 17 Endangered), including elephants, primates, wild cattle, several carnivores, and a range of large birds.
- ▶ 2,927 km² of protected habitats ranging from 70 to 750 m above sea level.

Illegal logging for rosewoods and other high value timber

Main **target species** are beng, *Afzelia xylocarpa*, and Burmese rosewood, *Dalbergia bariensis*

Mainly **rubber** plantations to feed growing export market demand

Governmentleased economic <u>land</u> <u>concessions</u>



Snares, traps, dogs, poison baits and other methods



is one of the most significant threats to wildlife

> Supplies markets both locally and internationally

Human population growth in Mondulkiri is higher than in any other province

Growing illegal settlements and <u>land</u> encroachment

Improved **roads** provide increased access to the forest





The Bunong and the Sacred Forest

The Bunong people believe that man and nature may be kept in balance thanks to the intervention of forest spirits. Special ceremonies are still performed by the Bunong people to appease the forest spirits. Sacred sites, such as waterfalls and old trees, are protected and venerated within the forest.





This belief system has for centuries helped the villages within KSWS to sustainably manage the forest resources. The forest ultimately belongs to the spirits but is also collectively owned by the community. However, with the advent of modern times and external immigration, things have started to change.



Within the core zone of KSWS, around 90% of families are Bunong. The forest contributes significantly to food security, with a vast range of products available throughout the year. Farming remains central to most livelihoods with both subsistence and cash crops currently being grown.

Tapping of liquid resin from dipterocarp trees is an important cash source; the resin is sold to Vietnam to make paints and varnishes. Resin trees are considered personal property and are marked individually by families. Recently, such trees have been targeted by illegal loggers, taking away an important source of income from the community.





Centre left: Metal gongs are played during a ceremony in Andoung Kraloeng.

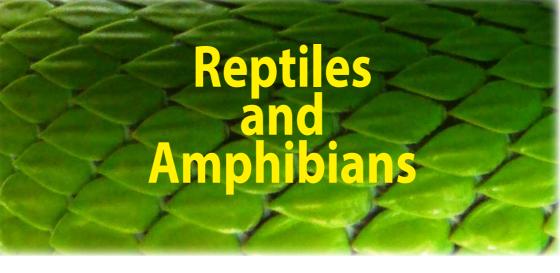
Bottom left: A traditional Bunong house.

Top right: Fish make up an important source of protein for villagers.

Centre right: A woven basket is used to collect

Top left: In a traditional Bunong ceremony, incense sticks are lit to honour the spirits.

Centre right: A woven basket is used to collect non-timber forest products from the forest. Bottom right: A villager using fire to collect liquid resin in the forest.





Crowned Spiny Lizard *Acanthosaura coronata*

This species gets its name because of its large 'crown-shaped' head. It can be found in lowland tropical forests in Cambodia and Vietnam. It is mainly active during the day and feeds on small insects and other invertebrates on the forest floor. Be careful not to step on one on the forest paths! Their varied coat patterns make them experts at camouflaging themselves.



Horned Tree Lizard *Acanthosaura capra*

This beautiful lizard is also known as the mountain horned dragon in South-East Asia. It lives mainly in trees where it likes to perch during the day and hunt insects at night. It is highly photogenic and unfortunately in high demand in the illegal pet trade. After being smuggled overseas they usually lose their majestic horns because of the high stress levels faced on the journey.



Common Sun Skink

Eutropis multifasciata

Skinks live mostly on the ground and are active during the day. You may see them basking in the sun across paths or on tree trunks. They feed mainly on ants and other small invertebrates. When they are not feeding or basking they will hide underneath the foliage, making them very difficult to spot.

Reticulated Python

Python reticulatus

This is the largest species of snake in South-East Asia, reaching lengths of up to 10 metres. This species can occur in a wide range of habitats. It feeds mainly on small to medium sized mammals, such as deer and wild pig. It squeezes and suffocates its prey before finding a hiding place in the forest to consume it. Keep an eye out for pythons in large tree hollows at ground level!



Traditional Bunong Story

"A long time ago, the python 'klan' was very aggressive, chasing people and spitting venom like the cobra. One day, the python bit and killed a man and at the man's funeral many offerings of rice were made. An old crow 'na-ark', a friend of the humans, was feeding on these offerings and saw the python. He told the snake that if he wanted his bite to be even mightier, he should find a banana tree and bite into it. The python eagerly followed the crow's advice and bit into the biggest banana tree he could find. The tree sucked out all his venom and the python became slow and fat, never harming another human again."



Gliding Lizard Draco maculatus

These formidable lizards are widely distributed across South-East Asia. They prefer forest edge locations and disturbed habitats with high levels of sunshine. These species can fly from the canopy, as they have evolved a 'patagium', or skin flap, that acts as a wing. They will spread their patagium and their dew-lap (a flap under the chin) to attract a potential mate, as seen in the photo.

Reptile Ecology

Reptiles are cold-blooded animals, or ectotherms; instead of producing heat from chemical reactions inside their bodies like mammals do, reptiles obtain their heat from solar energy by sunbathing. Because of this, reptiles only require one tenth of the amount of food that mammals of the same size need. Reptile scales are made of a protein called keratin, which is the same protein that makes bird feathers, and mammal hair and fingernails.

Spotted Sticky Frog *Kalophrynus interlineatus*

When frightened, this frog can exude a sticky substance onto its skin. This seems to be a defence mechanism against being eaten; not many predators would want to eat such a sticky mouthful! If you are lucky, you may see one of these frogs jumping through the leaves on the forest floor.







Berdmore's Narrow-Mouthed Frog

Microhyla berdmorei

You may find many species of narrow-mouthed frogs along the streams in KSWS. Their peculiar triangle-shaped body gives them their name. They are also known as chorus frogs because of their very loud and resounding symphony of calls, which they produce near streams. You may stumble across one of these wonderful concerts as you walk through the forest.

Paddy Frog Fejervarya limnocharis

This frog is very common across South-East Asia and is served in restaurants throughout Cambodia. Individuals gather in their thousands in the rainy season, invading rice paddies where they feed on insects. This provides a very useful service to rice growers across the country and elsewhere as a natural pesticide.





O'Reang Horned Frog *Ophryophryne synoria*

Two frog species new to science have been described from KSWS: the O'Reang horned frog and Mouhot's litter frog (*Leptobrachium mouhoti*). The horned frog is still known globally from only one river system in the south of KSWS, meaning these forests contain the entire world's known population of O'Reang Horned Frog!



Coppersmith Barbet *Megalaima haemacephala*

You will probably see many species of barbet during your stay, including the redvented barbet, which is only found in the Annamites. The name 'barbet' comes from the small moustache-like hairs (or barbets) at the base of their beaks. The coppersmith is the smallest of the barbets. Its call sounds like a coppersmith striking metal with a hammer.



Green-Billed Malkoha

Phaenicophaeus tristis

This is a species of non-parasitic cuckoo (unlike other cuckoos, it doesn't lay its eggs in other birds' nests). Adults can reach up to 60 cm. They are quite shy and prefer dense forest with lots of undergrowth. They are not good flyers, instead gliding and hiding among the leaves, making it hard to get a good shot of them. They have a distinctive long tail with broad white tips.





Greater Flameback

Chrysocolaptes lucidus

KSWS is well known for its world record number of woodpecker species. When you are in the forest, you will often hear the sound of drumming as the woodpeckers use their beaks to dig out food from trees. Many species, such as the flamebacks, use their long tongue to extract insects that are boring into trees. They will also drink nectar from flowers, similarly to hummingbirds.



Traditional Bunong Story

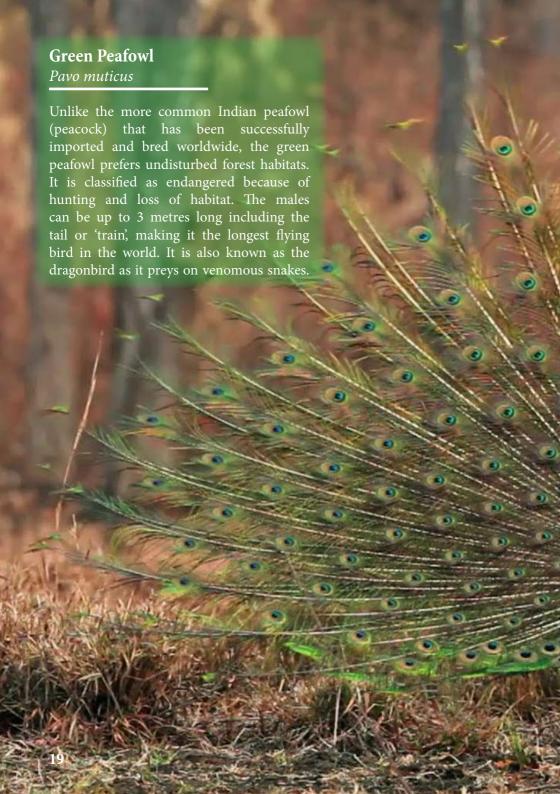
"Many years ago, there was a great war among the animals in the forest. The monitor lizards 'orraya' were enemies of the porcupines 'blork' and their allies, the badgers 'plorr'. The forest was shaken by the sound of swords being forged by the badger army, and all the animals cowered in fear when hearing it resonate through the forest. The hornbill 'kring' decided to copy this noise and use it to warn animals in the forest that war was coming and they should escape. This is how the hornbill got its call and why other animals are scared to approach it to this day."



Chestnut-Headed Bee-Eater

Merops leschenaulti

This small bird may easily be seen flying at dusk around the grassland. It feeds predominantly on insects and is especially fond of bees, wasps and hornets. It usually moves in large groups, and can often be seen at dusk. It will find an open perch atop a leafless tree and swiftly pluck insects out of the air.







Greater Racket-Tailed Drongo

Dicrurus remifer

There are numerous species of drongo that may be found around the camp. They prefer areas close to farmland. One of the most noticeable is the greater racket-tailed drongo, which is characterised by its elongated tail streamers with webbing at the tips. This species, and others in the drongo family, can copy the calls of predators as well as the alarm calls of other birds.

Black-Crested Bulbul

Pycnonotus melanicterus

Bulbuls comprise a very loud and diverse group of species; some believe they have one of the least attractive calls of all birds. This species, and at least seven others, may be seen flying in groups of up to 10 individuals. Grown-up chicks will sometimes stay with their parents to help raise the next set of chicks. Black-crested bulbuls have blue eyes, which is uncommon in birds!



Bird Ecology

Birds are closely related to reptiles and resemble them in many ways, including laying eggs with shells and having scaly legs. What makes birds unique is their ability to fly. They have evolved three main features to achieve this: 1) each bone is made of a honeycombed structure that is strong while staying light; 2) female birds only have one ovary, compared to two in other vertebrates; and 3) birds have no teeth, instead they use their beak to catch food, and then break it down in a specialised organ called a gizzard.

Crested Serpent Eagle

Spilornis cheela

As suggested by its name, this species of eagle prefers to feed on medium to large snakes. However, when snakes are not available, it may catch frogs, lizards and small birds. You might see one perching high up in the canopy as it patiently waits for its prey, or spiralling in warm air currents in the sky.



Red Junglefowl

Gallus gallus

Most domestic chickens eaten by humans across the globe are thought to derive from this one wild species, domesticated in Asia about 7,000 years ago. You may hear the wild male birds crowing in the morning and when you do, you will notice that the call is shorter than that of a domestic rooster. If you are lucky, you can catch a glimpse of one as it scurries along the forest floor in search of food.

Bar-Bellied Pitta Hydrornis elliotii

These birds are difficult to see, however they are beautiful and highly sought after by birders from across the world. They are active during the day, hopping along the ground and feeding on snails, termites and other invertebrates. Some pitta species use rocks or roots as anvils on which to smash snail shells open. Unlike other ground-dwelling birds, they freeze when they are frightened, instead of running or flying away.

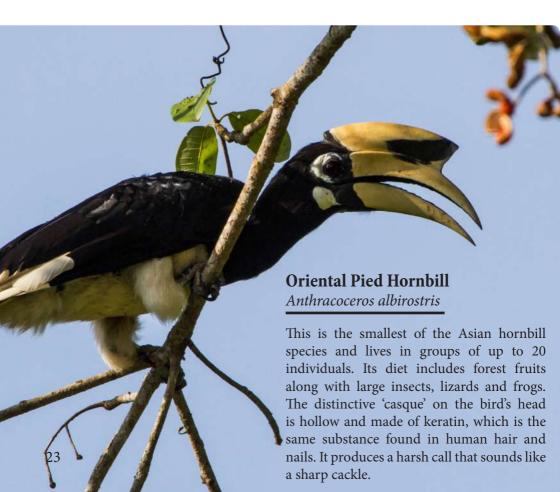


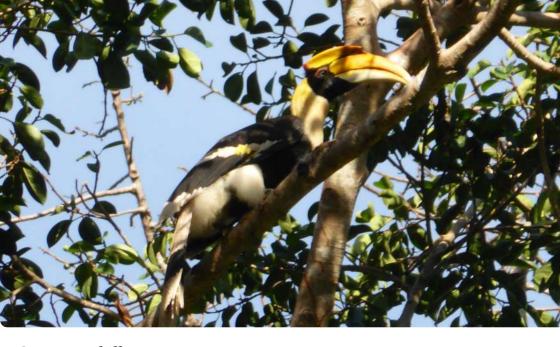
Germain's Peacock Pheasant

Polyplectron germaini

As the name suggests, this bird bears a resemblance to both peacocks and pheasants. Similarly to other peacock pheasants, it does not have flashy colours, but usually displays elaborate markings on its feathers. The wings and tail are decorated with spots in the shape of round eyes, which can be violet to green in colour. It feeds by sifting through the forest floor searching for berries, fruits, seeds, grubs and insects.







Great Hornbill

Buceros bicornis

This superb bird eats mainly fruits and is particularly fond of figs. It is also an opportunist feeder, meaning it will eat other things that it finds, such as small mammals, reptiles and birds. It can live for 35 to 40 years in the wild. Like other hornbills, it is very vocal, especially during the breeding season (January to April) when birds will form duets with their partners. During this time, the males will also perform acrobatic displays to attract potential mates. When ready to lay her eggs, the female hornbill builds a nest in the hollow of a large tree trunk, sealing the opening with plaster made mainly of faeces. She then cuts a small slit to allow the male to insert food that he has collected. Giant hornbills can usually be heard before they are seen; their impressive wings lack flight feather coverts and thus produce a distinctive "whooshing" sound.









Black Giant Squirrel *Ratufa bicolor*

This is one of the world's largest of over 200 species of squirrel, reaching lengths of up to 120 cm, including its long fluffy tail. This long tail is used as a counterweight for balance while the squirrel feeds on fruit in the high canopy. When not in use, the tail is limp and does not curl up as in most squirrel species. It can produce a very loud clucking sound as an alarm if it is disturbed.

Wild Pig Sus scrofa

The wild pig is very widespread and is an important food source for many species of predator in South-East Asia. The pig enjoys wallowing in muddy pits that are often found close to rivers and streams. It builds small dens in the forest using branches and leaves; if you are lucky, you may see one of these as you walk through the forest.





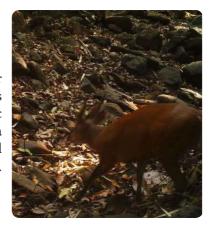
Gaur *Bos gaurus*

The gaur is the largest living wild bovid species in the world. Despite its size, it can tolerate rugged mountainous terrain as well as dense forest better than domestic and other wild cattle species. Depending on disturbance levels, gaur may become nocturnal (active at night) to avoid human encounters.

Red Muntjac

Muntiacus vaginalis

The red muntjac is a species of barking deer that gets its name from alarm calls that it raises when it senses a nearby threat. Red muntjac have distinct facial markings, including a gland just below the eye that is probably used for communicating and marking territory.



Small-Toothed Civet

Arctogalidia trivirgata

Civets are similar in many ways to ancient carnivores. They have long slender bodies and tails, and some species resemble cats or foxes. Nearly all civet species are nocturnal and live in trees, although they will travel on the ground to find food. The small-toothed civet, and some others, are harvested by humans to collect musk from their glands, which is then used in the perfume industry.



Northern Pig-Tailed Macaque

Macaca leonina

pig-tailed macaque is aggressive and louder than most other primates in KSWS. Its name comes from the way it carries its short tail, half-erect, resembling that of a pig. Its scientific name, meaning 'lion-like', was given because of the hairy mane that characterises adult males. Unlike other primates, macaques are happy to forage on the forest floor; for this reason they are also known to raid farms in the surrounding area. When raiding crops, they will usually have one individual acting as a lookout, who may then call an alarm if humans are approaching. Macaques may travel in large troops of over 50 individuals, but will usually split up into smaller groups to forage.



Traditional Bunong Story

"One day, a civet 'mpik' was feeding atop a tall fig tree. He heard a loud noise and saw a beautiful woman being tied up by two wild buffalo 'rapoo' who wanted to eat her. When he saw them leave, he transformed into a man and ran down to help. He untied the woman and invited her to visit his house in the tree. When the buffalo came back, they couldn't find the woman and became angry. The civet threw figs on their heads, which scared the buffalo who ran off cursing. The civet then married the woman and went to live with her in the village till the end of his days."





Yellow-Cheeked Crested Gibbon

Nomascus gabriellae

During the day, gibbons tend to prefer the upper canopy, high in the trees. They eat mainly fruit, but can also eat leaves and insects. Living at the top of the trees means that they have few predators, except humans. Gibbons move by swinging below branches using their elongated arms and hands; they are very silent when moving compared to other primates and can swing up to 10 metres in one go. They produce incredible 'songs' at sunrise that are used to defend their territory and their favourite feeding trees, to find partners, and to strengthen the bond between partners. In the past, gibbons were thought to be monogamous, living and mating in male-female pairs, but recent studies have shown otherwise; mating outside of the male-female pair occurs regularly, especially in crested gibbons. Both males and females are born yellow. At around 6 months old, all youngsters start to turn black, with only their cheeks remaining yellow. At sexual maturity, the females turn back to yellow, whilst the males stay black. This species of gibbon can live for up to 50 years in captivity.

Asian Elephant

Elephas maximus

Despite being the largest South-East Asian land mammal, elephants can walk silently in the forest, and are well hidden by their grey colouration. These large herbivores can eat up to 130 kg of food in a single day! They move around in large herds led by an experienced adult female (the 'matriarch') and made up of related individuals, usually females and their young. These herds sometimes come together to form larger groups called clans. Males leave the herd when they reach puberty, at around thirteen years old. Elephants roam the forest in search of food and water. They may be heard from very far away, as they emit loud rumbles and moans, including low frequency infrasounds that can be heard by other elephants many kilometres away. Humans and elephants in Cambodia, as in many other places across Asia, have a very complex relationship. Elephants have always been respected in Bunong culture, and in the past, wild elephants were captured to be used on farms. They indicated wealth and social status. In many cases, the elephants were treated as part of the family and when the animals fell ill, a ceremony would be performed in their honour. Today, there are few villages with captive elephants remaining; it is perceived as a dying tradition.





Pygmy Slow Loris *Nycticebus pygmaeus*

This is the smallest species of primate in Cambodia. It has short thick hair that changes colour seasonally. The second toe on each foot is missing its nail and is called a 'toilet claw' because it is used for grooming. These animals are nocturnal (active at night) and use scent glands on their elbows for communication. They are endangered and hunted for use in traditional medicine.

Leopard CatPrionailurus bengalensis

The leopard cat has the widest distribution of all small Asian feline species. This is because this versatile species can survive in very different and extreme habitats, and is also very resilient in disturbed habitats. It is an excellent swimmer thanks to slight webbing on its paws. This has enabled it to colonise many small islands around South-East Asia. It is the same size as a house cat.



Sun Bear

Helarctos malayanus

The sun bear is the smallest, and one of the rarest, bear species, reaching only 150 cm. It is mainly active during the day and is solitary. It can be distinguished from other bear species by the cream patch on its chest. It is hunted for its gall bladder, which is used in traditional medicine. This bear is an able climber, reaching beehives to eat the honey; look out for claw marks on the trees!







Resin Tree (left) *Dipterocarpus alatus*

Collection of liquid resin from this tree species is an important cash income for many Bunong families living within KSWS. The resin is sold to make paint and varnishes. Individual trees are often owned by families, making resin harvesting a sustainable practice that is handed down through the generations within a family. Dipterocarp species are quite dominant within the evergreen forests of KSWS. Their straight trunks and large stature make them vulnerable to illegal logging.

Sralao (right)

Lagerstroemia calyculata

This is one of the most commonly found tree species around Jahoo camp. These trees can grow very tall and develop a bark that peels off, giving a distinctive trunk pattern. However, it is not highly valued for timber because many of the older trees develop a hollow core. These hollows provide homes for many species, including hornbills, pangolins, bats, bears and squirrels.





Beng (left)

Afzelia xylocarpa

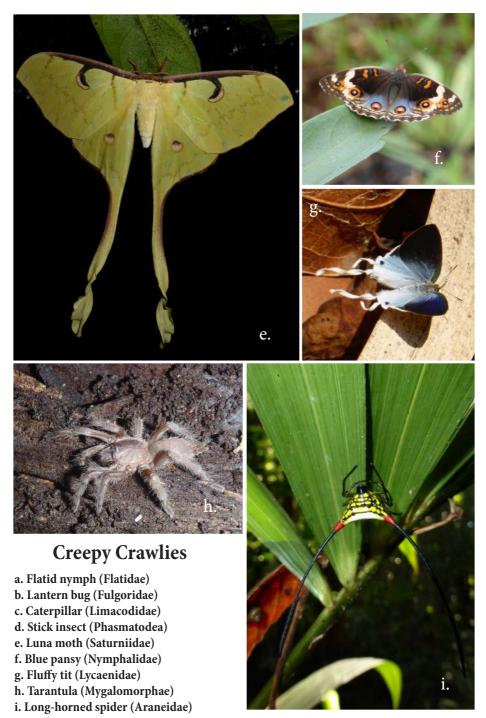
It is now rare to see a standing tree of this species in Cambodia. The wood is highly valued because of its dark to light red colouring and its hardness and durability. This species is globally endangered. It is over-exploited and at risk throughout extinction Cambodia. The seeds are large and woody. Collection of seeds for re-planting has proven difficult as mature trees are being cut down at a higher rate than saplings can be regrown.

Fig Tree (right)Ficus altissima

As its scientific name explains (altissima = very tall), fig trees grow to very large sizes in South-East Asia. This species is also known as a strangler fig. It starts life growing on the branch of another tree, from where it sends its roots down to the ground and slowly envelopes and kills its host tree The fig tree then becomes self-supporting. Its fruits are an important food source for many species of primates and other mammals.







GLOSSARY

Arboreal: Lives in trees

Canopy: The top of trees

Crepuscular: Active during

sunrise and sunset

Dewlap: A flap of skin under the chin that is protracted for mating display

Diurnal: Active during the day

Ectotherm: An animal that derives most of its body heat by absorbing heat from its surroundings

Endemic: A species that is only found in a particular area/region/country (in the wild)

Endotherm: An animal that derives most of its body heat from its own metabolism

Epiphyte: A plant that grows on another plant, especially one that is not parasitic.

Forage: To search widely for food or provisions

Frugivorous: An animal that eats mainly fruit

Gall bladder: A small sac-shaped organ beneath the liver in which bile is stored

Gizzard: A pouchlike organ in the digestive tract, where food is mechanically ground

Insectivorous: An animal that eats mainly insects

Ligneous: Made from, consisting of, or resembling, wood

Matriarchal: Form of social organisation in which a female is the head

Monogamous: Having only one mate at a time, sometimes for life

Nocturnal: Active at night

Patagium: A membrane or fold of skin between the forelimbs and hindlimbs, on each side of the animal

Polygamous: Having more than one mate at a time





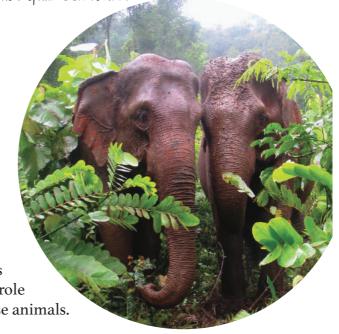
Experience the original and premier elephant sanctuary in Cambodia.

Hike to visit the elephants in the beautiful tropical forest.

Walk with them as they interact and graze.

Learn about each of our elephant's unique histories and their road to recovery.

Meet the local indigenous people and see the unique role they play in protecting these animals.



Here, our mantra is very simple: we do what is best for the elephants.

When you make a donation to visit the Elephant Valley Project, you can be sure your contribution is making a difference. Our focus for the past 10 years has been looking after our herd of elephants and providing vet care across Mondulkiri. However, the care of our elephants would not be possible without the local people, therefore we employ over 50 local Bunong staff and provide health support, education scholarships, and forestry protection for their communities. Our NGO ELIE, has evolved and we now look towards the future and preservation of the species as a whole. Not only can you come and visit our elephant sanctuary and experience elephants thriving in their natural habitat, but you can make a real difference by helping a community and forest survive and grow.

We invite you to come visit and learn more. We offer:

Full Day Visits - Half Day With Volunteering - Multi Day Visits

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